F1-248

II. Title Page

Project Title
Riparian & Salmonid/Trout Restoration

Applicant
City of Vacaville
Community Services Department
40 Eldridge Ave., Suite 14
Vacaville, CA 95688
Tele # 707-449-5655

Project Coordinators

Bob Farrington - City Landscape Architect
City of Vacaville
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Vacaville, CA 95688
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Duke Foster - Project Coordinator
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Pine Grove, CA 95665
Tele # 209-296-5657
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Type of Organization
City/Local Government

Tax I.D. Number
932-0436-0

Contact Person
Bob Farrington
City Landscape Architect
City of Vacaville

Participants/Collaborators
State of California-Department of Fish and Game, Vacaville Tree Foundation, University of California-Davis, State of California-Department of Parks and Recreation, Vacaville Unified School District and the City of Vacaville.

Project Group Type
Construction Project

III. Project Description

a. Project Description and Approach

For the benefit of Steelhead Trout, Stripped Bass and other anadromous fish, Alamo and Ulatis Creeks, in the City of Vacaville, will be restored and enhanced by the following measures:

-Removal of non-native plants in the over-story and eradication of noxious weeds.

-Removal of stream flow impediments

-Planting of native riparian plants for the creation of a multi-story riparian habitat

-Development of riffles, runs and pools for improved stream flows, water quality and fisheries enhancement

-Provide public access for educational purposes of riparian and fisheries habitats.

The first phase of the restoration/enhancement project will be the removal of debris, man-made obstructions, channel impairment & non-native vegetation immediately adjacent to the streams. Removal will be accomplished through mechanical means and hand labor.

The second phase will include placement of boulders and rocks of appropriate size for the creation of riffles, runs & pools. The smaller rocks will be placed on the stream bed in pools & riffles for fisheries habitat enhancement.

The third phase consists of re-vegetation of the aquatic-riparian zone on both banks of the stream corridor. As the new plantings are placed along the streams, public access will be developed to provide education, exposure & interpretation of the habitat restoration project. Strategic areas will be established along the corridors for public view points of critical habitat enhancement areas.

b. Location and Project Boundaries

The city is Vacaville and the county is Solano. The watersheds are Laguna Canyon, Gates Canyon and Lagoon Valley (Please see attached map).
The work will encompass the entire Alamo/Laguna Creek corridor from Lagoon Lake north & easterly to the confluence of Alamo Creek to the Marshall Road Bridge crossing. On Ulatis Creek, the same work will take place from Zaragosa Lane through downtown Vacaville south easterly to McClellan Street and from Allison Drive to Ulatis Drive. Along Alamo Creek, work will include the corridor from Lagoon Lake to Marshall Road and Peabody Road to Nut Tree Road.

Please see project map which shows the areas for restoration. A total of approximately 57 acres and 20,000 feet of stream encompasses the proposed improvements.

c. & d. Expected Benefits - Background & Biological/Technical Justification

A grant has been received from The California Department of Parks and Recreation under the Habitat Conservation Fund for Anadromous fish and Riparian Restoration. The city is underway with plans for the intended improvements which impact **Instream aquatic habitat and Shaded riverine aquatic habitat.** The priority species include **Steelhead trout and Secondarily striped bass and migratory birds.**

Primary benefits will be the improvements for the priority species and rare, threatened and endangered species. Secondary benefits will be the educational opportunities afforded by interpretive signs and services and results of systematic surveys of the riparian/stream corridors.

Other ecosystem programs currently underway and researched include Lagoon Valley Lake and Ulatis Creekwalk. The Lake program involves restoration of a putrefied lake, edgewater environs and fisheries enhancement. The Creekwalk will provide linear parkway improvements, pedestrian bridges, erosion control measures, planting and irrigation, low water pedestrian crossing, five (5) waterfall/weir structures, two (2) observation decks and a water recirculation system.

Accomplishments to date include the transfer of property at the Lagoon Valley site from the county to the city. The lake was originally developed through funds by the Wildlife Conservation Board and grants are being solicited to several agencies for funding the needed lake improvements. Approximate costs for improvements to the Lagoon Valley Park are $300,000. The budget for the creekwalk is approximately $425,000.

Interaction and documentation with the following organizations and individuals has occurred and continues for total environmental enhancements in the Vacaville area; Wildlife Conservation Board, Solano Irrigation District, City Public Works Department, California Department of Fish and Game, National Grant Services, Wade and Associates, Cella Barr, Habitat Conservation Fund, Biologist Fred Meyer, Roger Scoonover, Peter Perine and many other individuals too numerous to keep this document at its required length.

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According to the CALFED Bay-Delta Program objectives, the resultant work of the this project will assist in determining factors that 1) will provide good water quality, 2) assess aquatic and terrestrial habitats in and along streams which influence delta flows and 3) assist in determining factors that will aid in reducing risk to the delta system.

According to the guidelines regarding stressors, there are seven (7) stressors that impact this project.

#1-Alteration of flows and other effects of water management, #3-Channel form changes, #4-Water quality, #5-Water temperature, #6-Undesireable species interactions, #8-Population management and #12-Wildlife.

#1-Alteration of flows and other effects of water management

Current conditions are poor for migratory fish due to a variety of stream obstructions which include household garbage, discarded concrete, vehicle parts, shopping carts, building materials, fallen trees, bridge footings and other impoundment's. These impediments affect stream flow, temperature, water quality, sediment transfer and stream configuration, to name a few.

The expected benefits will be improved stream flows through the removal of impediments, creation of riffles, runs and pools for improved fisheries habitat, enhanced water quality and temperatures, elimination of bank erosion and removal of non-native plant species which adversely impacts the riparian corridor.

#3-Channel form changes

The current conditions regarding stream flow include minimal riffles, runs and pools. Artificial conditions exist, such as the placement of material products in the stream, which has caused stream bed alteration causing somewhat flat areas and stream profiles lacking adequate runs and cover for fish.

Some erosion has occurred which has re-configured the stream and made it unsuitable for natural fish and riparian habitats. Natural cover of the riparian areas has experienced migrant plant species such as Tree-of-heaven, Yellow star thistle, Russian thistle, Pampas grass, Plum, Annus, Periwinkle, Bamboo and Oleander.

Corrective measures for healthy channelization of both streams by the incorporation of appropriate rocks, gravels and boulders will go far in preventing loss of spawing gravels, enhancement of stream meander, improved channel depth and width, reduction of fines and an increase of prime fishery habitats

#5-Water temperature

Another aspect of the Alamo and Ulatis Creek corridors is the frequent open expanses of water lacking adequate over-story. Canopy density is a critical factor in water temperature and this project will provide for a continuum of over-story for maintaining appropriate water temperatures. Also, proper channelization and flow measure methods will aid in maintaining cooler temperatures for fish enhancement.

#6-Undesireable species interaction

As noted in #3 above, numerous non-native plant species have invaded the riparian zone causing abnormal habitat conditions along the corridor often choking out native vegetation. Elderberry occurs along the streams which will be protected and enhanced by the removal of more competitive non-native plants.

#8-Population management

Man made physical barriers exist along both corridors in the stream as well as the riparian zones adjacent to the water course. Migratory movement by anadromous fish and wildlife will be greatly improved by removing obstacles in the water ways and throughout the riparian corridor. Especially important will be stream sediment stability and the incorporation of rocks and cobbles appropriate for spawning.

Ability for multiple species support is anticipated once the project is completed and the new plantings are established as well as the stream enhancements .

#12-Wildfire

The planting of tree species which lack natural fire ladders will be a key factor in the riparian design. Perennials will be utilized in the under-story for avoidance of seasonally dry plants that would contribute to increased fuels for fire. Public trails will provide a ribbon of fire breaks along the corridors and service roads; bicycle lanes will aid in fire protection and prevention.

With the aid of other collaborative entities, temperature sensing devices will be placed in stream reaches based on channel type criteria as described in the California Salmonid Stream Habitat Restoration Manual published by the State Department of Fish and Game.

It is anticipated that thermographs will be deployed during July through September for about a 4-week period. Data will be entered into a stream temperature data base. Thermograph deployment objectives include: a) baseline descriptions of critical temperature conditions and b) long-term monitoring to describe changes in temperature as a result of restoration or land use changes.

Another aspect of this work involves determining the quality of spawning gravels available to steelhead. A common and accepted method for relative measures of spawning gravel quality is the McNeil method. This involves using a device to take a core sample of approximately the top 12 inches of stream bed substrate. The gravel sample is then sorted through screens of various mesh sizes to categorize the gravel into size groups.

An important indicator of gravel quality is the proportion of fine sediments (sand and silt) in the sample. Steelhead egg and larval survival in spawning gravel containing more than 20% fine sediments is significantly reduced compared to gravel with lesser amounts of fine sediments. Reduced survival is generally attributed to inhibited water percolation through silt laden gravel that results in poor oxygen exchange vital for egg and larval development.

We also hope to have gravel samples taken that will allow sample retrieval and laboratory processing. A one-time measure of gravel quality provides a "snapshot" of relative stream and watershed health. Long-term monitoring of spawning gravel quality is a useful tool in determining whether habitat conditions are improving or declining over time.

With this in mind, we hope to analyze the results of the riparian and stream enhancement work to adequately verify our efforts.

e. Proposed Scope of Work

Financial reports will be available upon completion of each of the following phases. The reports will include itemized accomplishments with associated costs. Technical reports will become available upon completion of the project and when adequate time has passed to appropriately assess the outcome of the work.

The first phase of the restoration/enhancement project will be the removal of debris, man-made obstructions, channel impairment & non-native vegetation immediately adjacent to the streams. Removal will be accomplished through mechanical means and hand labor.

First phase duration winter/spring 1997/98.

The second phase will include placement of boulders and rocks of appropriate size for the creation of riffles, runs & pools. The smaller rocks will be placed on the stream bed in pools & riffles for fisheries habitat enhancement and spawning.

Second phase duration spring/summer 1998.

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The third phase consists of re-vegetation of the aquatic-riparian zone on both banks of the stream corridor. As the new plantings are placed along the streams, public access will be developed to provide education, exposure & interpretation of the habitat restoration project. Strategic areas will be established along the corridors for public view points of critical habitat enhancement areas.

Third phase duration fall/winter 1998.

f. Monitoring and Data Evaluation

The data will be evaluated and comparisons made with the criteria and guidelines established by the State of California, Department of Fish and Game's "California Salmonid Stream Habitat Restoration Manual". Recommendations for correction to unhealthy and non-productive habitats will be made by an environmental firm in collaboration with University of California at Davis upon final evaluations.

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We also hope to have gravel samples taken that will allow sample retrieval and laboratory processing. A one-time measure of gravel quality provides a "snapshot" of relative stream and watershed health. Long-term monitoring of spawning gravel quality is a useful tool in determining whether habitat conditions are improving or declining over time.

The above evaluation procedures have attained credibility with the Department of Fish and Game which have been utilizing these methods for some time.

Peer review and coordination of evaluation include agencies and organizations mentioned in items c&d, page 3, as well as the University of California at Davis.

g. Implementability

All procedures will comply with state and local laws and ordinances. Local entities will be apprised of work to be accomplished and the results. Due to the sensitivity and technical knowledge necessary to carry out these surveys, the department will utilize qualified biologists. CEQA has been completed.

All properties lie within the jurisdiction of the city. Permits have been secured.

Regional and local support comes from all city departments and the city council, Solano Irrigation District, Vacaville Unified School District, Solano Open Space, State of California, Resources Agency and the Vacaville Tree Foundation.

Land use conditions along the corridors include commercial and residential as well as open space parklands. Portions of the streams are adjacent to bicycle and walking paths.

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IV. Costs and Schedule to Implement Proposed Project

	CalFed	HCF	City	Total
Clearing, Grubbing/Pruning 39 acres @ $3,000/acre	$ 59,500	$111,500	$ -0-	$171,000
Drop box/debris removal 4 @ $2,500 each	-0-	-0-	20,000	20,000
Erosion Protection	18,000	-0-	-0-	18,000
Rocks, cobbles and boulders	-0-	31,600	-0-	31,600
Interpretive Signage	-0-	-0-	3,000	3,000
Plant Maintenance (90 day establishment period)	-0-	-0-	30,000	30,000
Revegetation (Approx. #) 382 Trees/Shrubs @ $90 ea.	10,000	24,400	-0-	34,400
Site Preparation	27,000	-0-	10,000	37,000
Engineering, Design, Admin. and Contingency	60,700	46,300	24,600	131,600
Total	$213,800	$175,200	$ 87,600	$476,600

Discussion - The need for support from CALFED is critical to significantly impact the proposal to improve the Alamo/Laguna and Ulatis Creek Drainage into the Delta. The City of Vacaville is continually under budget constraints and can provide in-kind services with labor and materials.

Due to the significance of rare, threatened and endangered species in and along the riparian corridors, the city continues to solicit support in their efforts to preserve, enhance and protect these waterways.

Although two grants have been approved by the State of California, Resources Agency for riparian restoration and anadromous salmonids/trout, this project will continue to need funding for satisfactory completion of the remaining 60% of the system. Response from a grant request to the National Fish and Wildlife Foundation is pending

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b. Schedule Milestones

The first phase of the restoration/enhancement project will be the removal of debris, man-made obstructions, channel impairment & non-native vegetation immediately adjacent to the streams. Removal will be accomplished through mechanical means and hand labor

First phase duration winter/spring 1997/98 - Payment for 33 1/3 of total costs due.

The second phase will include placement of boulders and rocks of appropriate size for the creation of riffles, runs & pools. The smaller rocks will be placed on the stream bed in pools & riffles for fisheries habitat enhancement and spawning.

Second phase duration spring/summer 1998 - Payment for 33 1/3 of total costs due.

The third phase consists of re-vegetation of the aquatic-riparian zone on both banks of the stream corridor. As the new plantings are placed along the streams, public access will be developed to provide education, exposure & interpretation of the habitat restoration project. Strategic areas will be established along the corridors for public view points of critical habitat enhancement areas.

Third phase duration fall/winter 1998 - Payment for 33 1/3 of total costs due.

c. Third Part Impacts

Impacts could be experienced to the Solano Irrigation District but they would be positive in nature due to improved water quality and flows. No mitigation measures affect this project.

V. Applicant Qualifications

The project coordinator has had over 26 years in administering grants. The variety of grants has included stream restoration, fisheries enhancement, landscaping, campgrounds, day use facilities, and general environmental and community service projects.

The Park Planner, who will oversee the long term maintenance and operation of these projects, has a full-time staff of 28 Park Maintenance Workers and 14 seasonal personnel that are trained in all aspects of horticulture. The City of Vacaville has 36 parks and facilities ranging from tot lots to 400+ acre regional parks. Over the past 26 years, extensive plantings have been completed at 19 neighborhood parks, 7 community parks, 6 recreation centers and over 2,000 acres of greenbelt/open space.

Technical responsibilities include the expertise of Cella Barr Associates of Sacramento who have been assigned the task of construction design for the project. This firm has over 30 years of experience with a variety of personnel including; hydrologists, biologists, engineers, surveyors and architects.

Immediate overview will be conducted by the State of California Department of Fish and Game, Biologist Roger Scoonover, Biologist Peter Perine and extensive research staff from the University of California at Davis.

Professor Tedmund J. Swiecki of the Vacaville Tree Foundation will provide technical and advisory information for the selection of riparian plants.
Mr. Nicholas D. Esplin of the Vacaville Unified School District will spear head the committee for advice regarding education and interpretation along the streams corridors.

There are no conflicts of interest with individuals related to this project.

VI. Compliance with standard terms and conditions

The City of Vacaville is bound by civil service rules and regulations as well as non-discrimination and non-collusion policies. The city will comply with standard requirements and sign all necessary documents if and when an agreement for funding has been reached between the city and the CALFED program.

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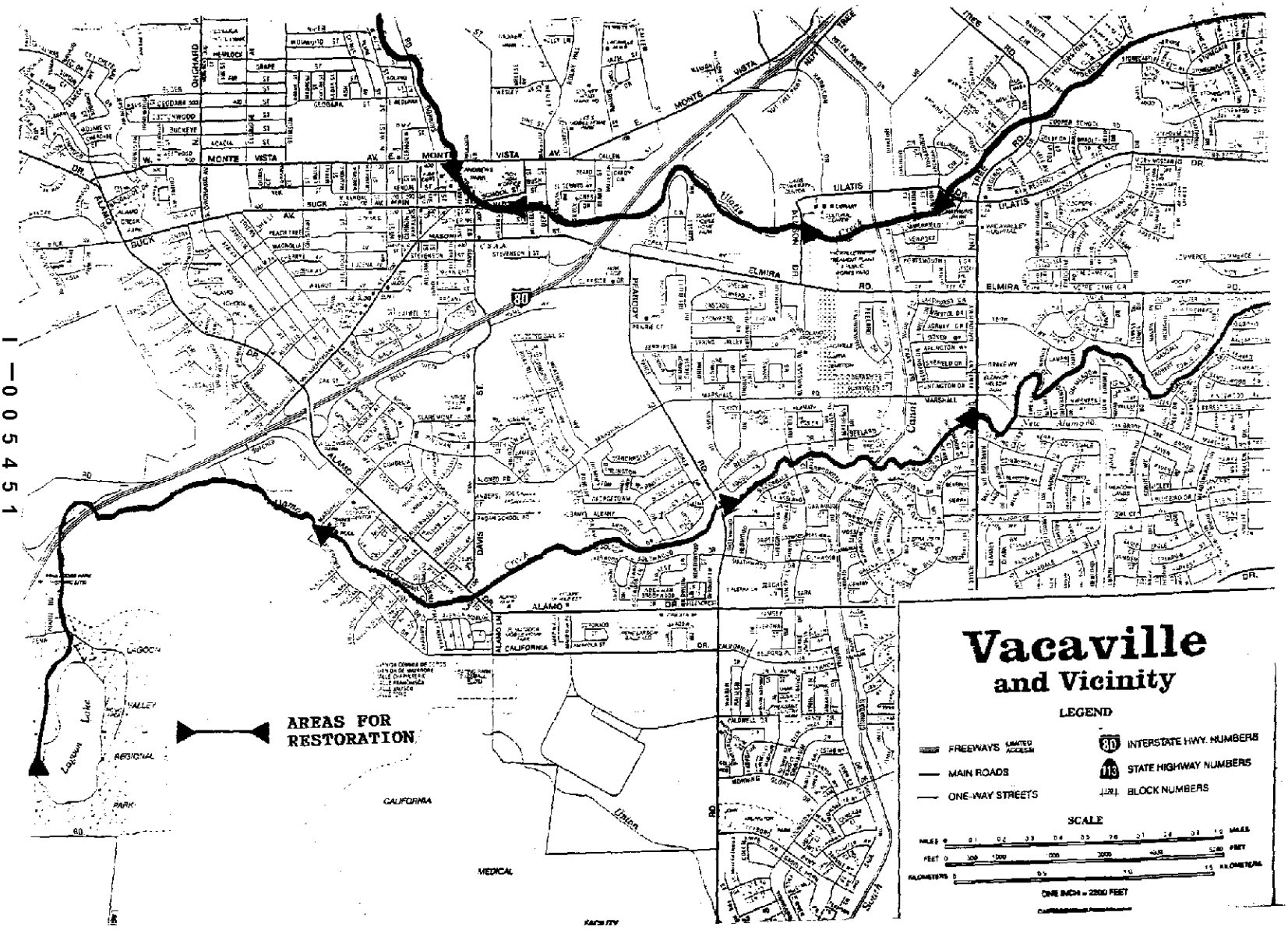

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